Research Note 81-24

TRAINING TO REDUCE THE USE OF IRRELEVANT INFORMATION IN PERSONNEL SELECTION

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This study represents a summary of work in progress on the role of irrelevant information in personnel selection. The research was designed to advance previous work on training agricultural experts to avoid irrelevant information. This was accomplished in two ways. First, Nagy's (1981) results showing that subjects used irrelevant job applicant information in making hiring recommendations was replicated. It was found that in addition to relevant information, irrelevant information of age, sex, and physical attractiveness were used as a part of hiring judgments.

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Second, two training programs (one lecture based, one interactively based) designed to reduce the use of irrelevant information were evaluated. These training programs were adapted from ones successfully used in an earlier study involving soil judges (Shanteau & Gaeth, 1981). The two training programs were tested separately using a pre-test, training, post-test design. The results, although only tenative, show that both the lecture training and the interactive training reduced the influence of the irrelevant information. These results suggest that the training techniques developed previously for agricultural judgment can be successfully extended to improve personnel selection judgments.

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Training to Reduce the Use of Irrelevant Information in Personnel Selection

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Training to Reduce the Use of Irrelevant Information in Personnel Selection

by

Gary J. Gaeth and James Shanteau

INTRODUCTION

The fact that irrelevant information often has an adverse effect on human judgment is well established. For example, researchers have previously shown that irrelevant information slows down judgment speed (Krueger, 1973), increases judgmental errors (Hoyer, Rebok & Sved, 1979), and causes a decrement in evaluating relevant information (Troutman, & Shanteau, 1977). These and similar studies provide a first step in understanding the role of irrelevance in judgment (Gaeth & Shanteau, 1981). However, little attention has been focused on the next logical step: the development of training procedures to reduce the adverse influence of irrelevant information.

An initial effort in this direction was taken by Shanteau and Gaeth (1981). In this earlier study, the main concern was to develop a training technique which could be used to reduce the influence of irrelevance. It was first confirmed that irrelevant materials adversely influenced agricultural judges experienced in soil science. Then, two training procedures were evaluated; a lecture-based (verbal instructions) training procedure, and an interactive-based (perceptual) training procedure.

The results showed that a combination of these two training procedures considerably reduced the influence of the irrelevant information. However, the lecture training alone had little effect. A notable finding was that while no accuracy feedback was given, an increase in accuracy was observed following training. That is, accuracy increased as the use of irrelevant information decreased.

It was suspected that the interactive training was largely responsible for both the reduction in the influence of irrelevance and the increase in accuracy. Unfortunately, because only a small pool of experienced soil judges was available at KSU it was necessary to present both the lecture training and the interactive training to every subject. Thus, it was impossible to separate the effect of the interactive training from that of the lecture training.

In summary, our initial study (Shanteau & Gaeth, 1981) represented a major step toward understanding the role of irrelevant information in human judgment. First, we demonstrated that irrelevant information is indeed a problem, even for experienced judges. Then, training procedures were developed and tested which improved judgments when irrelevance was present. Despite this earlier success, two questions deserve immediate investigation: (1) What is the separate impact of lecture and interactive training? (2) Will the original soil training procedures generalize to other applied areas? The answers to these two questions will considerably advance our understanding of the effects of irrelevance and help in the

development of general training techniques to deal with it.

Irrelevant Information in Personnel Selection

A study by Nagy (1981) provides a recent demonstration of the influence of irrelevance in the area of personnel selection. Initially, Nagy was interested in the influence of biases on hiring judgments. As she points out, the majority of past research dealing with personnel selection has focused on job-relevant dimensions of information such as academic record (Hakel, Ohnesorge & Dunnette, 1970), background ienformation (Mayfield & Carlson, 1966), and work experince (Norman, 1976). Recently, however, interest has included investigations of the role of job-irrelevant information such as sex and age.

After an extensive review of the literature (the reader is referred to Nagy, 1981), Nagy selected the factors of sex, age, and physical attractiveness as the three most common pieces of job-irrelevant information. They were also thought to be the most likely to have an influence in personnel selection. Despite previous literature indicating that these job-irrelevant factors may have a qualitative influence, the exact form of this influence had not been studied quantitatively prior to Nagy's work.

After selecting these job-irrelevant dimensions, Nagy created a set of hypothetical job applicants. With this set, she studied the influence of job-relevant (experience and recommendations) and job-irrelevant information (sex, age, attractiveness) on both undergraduate subjects and experienced personnel selection managers. The results

showed that the undergraduates rather consistently used all three irrelevant dimensions in their job selection judgments. In contrast, the experienced personnel relied primarily on job-relevant information, with less use of sex information.

The important fact is that both groups did make some use of the irrelevant information. Nagy's demonstration of such usage is quite profound. The irrelevant information used in her study is defined to be irrelevant both by company policy, and by law. Thus, given the evidence from Nagy's study, the topic of personnel selection provides a meaningful research area in which to investigate the effects of training on the use of irrelevant information. It is also an area in which subjects are readily accessible and in which research is straightforward.

Purpose and Rationale of the Present Study

Motivated by the success of the training procedures used in earlier research on agricultural judges (Shanteau & Gaeth, 1981), we set out to test them in the area of personnel selection. Our goals in doing this were threefold: First, we felt that it would be useful to adapt the training procedures from the original soil study and apply them to personnel selection. If any generalizable training procedures are ever to be developed, such adaptation must be achieved.

Second, we wanted to separate the effects of lecture and the interactive training. Because of the limited availability of soil scientists, such a comparison would be

impractical. However, Nagy demonstrated that students could be meaningfully used as participants in a personnel study. Therefore, a large subject pool would be available to compare the training procedures.

Finally, we were motivated by the importance of the area of personnel selection. It would be of no small consequence to develop a usable training procedure which reduced the use of irrelevant information in job hiring. Any such procedure would be likely not only to help businesses comply with the law, but also to increase the effectiveness of the personnel selection process.

To reach the point where the training procedures could be evaluated, it was first necessary to reproduce the stimuli used in Nagy's research. Fortunately, we were able to obtain copies of the job application forms used by Nagy.[1] Using these, we were able to create a set of similar, but improved stimuli.

The basic research strategy was to use these stimuli in a (1) pre-test, (2) treatment, (3) post-test design. The two training procedures then served as the treatments to be evaluated.

Reservations

It is necessary to keep in mind the tentative nature of the initial research presented here. Although the details

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[1]The authors wish to thank Geraldine Nagy for providing a complete set of her stimuli, along with instructions. Without this material, this research would have been impossible.

of the experimental design and training procedures have been developed, the analyses are based on only a few subjects. In addition, the instructions were slightly adjusted while this initial research was in progress.

Two positive points should be noted. Because we followed Nagy's (1981) stimuli and design, our results can be directly compared to her findings. This may be done independently of the training procedures and represents a first and necessary step in the validation of our experimental design. Second, the revised training procedures are clearly superior to those used by Shanteau and Gaeth (1981). Many of the earlier steps have been combined and made more efficient. Moreover, the increased understanding of the structure underlying the training approach should now make further generalization to other new areas much easier.

METHOD

Subjects. Twelve subjects were recruited through a bulletin board advertisement at Kansas State University. They were each paid $3.00 per hour for their participation. There were six males and six females; the group had a median age of 22 years.

The two training procedures were being developed as this initial research was in progress. Thus, the training procedure given a subject was chosen more by what was ready for testing rather than by a pre-determined sequence. Four subjects received only the pre-evaluation. Five subjects

were given the pre-evaluation, the lecture training, and the post-evaluation. Two subjects received the pre-evaluation, the interactive training, and the post-evaluation. Finally, because of an experimenter error, one of the subjects was given an incorrect version of the pre-test, then the correct lecture training, and the correct post-evaluation. Because of the pilot nature of this study, all of the data was retained and analyzed.

Evaluation Task. The pre- and post-evaluation procedure was identical to the one used by Nagy.[2] The evaluation task required the participants to judge the hiring desirability of a number of hypothetical job applicants. Each was described by a job application form which contained a written information sheet and a photograph. An example of one of the job application forms is given in Figure 1. The job applicant form was modeled after one actually used at the Weyerheauser Corporation in Washington state.

In addition to various filler information (name, address, medical record, etc.), used to make the form more realistic, each form contained five dimensions of critical information: sex, age, attractiveness, recommendations, and related job experience. In the set of stimuli, each of these factors was varied across two levels as follows: Sex--male, female; Age--old, young; Physical

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[2]The reader should refer to Nagy (1981) for more details as to her procedures. Only a summary will be given here.

APPLICANT INFORMATION FORM

WEYERHAEUSER CORPORATION

for position : Computer programmer/analyist

Name: Jane Armstrong

Address: [redacted]

[redacted]

Telephone No.: [redacted]

Social Security No.: [redacted]

Age: 45 Sex: Female

Position desired: Computer programmer/analyist

Is applicant willing to relocate? yes

Is applicant willing to work evenings, weekends, or holidays when necessary? yes

Education: Education includes: 4 year college degree in computer programming/computer science

Business Experience: Applicant has had approximately 8 years of relevant work experience.

Recommendations: Recommendations from past employer(s) or supervisor(s) were generally: below average

Other: Medical history and examination results: normal

D0240
Applicant #

Figure 1. Typical job application form.

PII Redacted

attractiveness--high, low; Recommendations--above average, below average; Experience--1 year, 8 years. The photographs were selected by Nagy to reflect the specific levels of sex, age and physical attractiveness.[3] Thus, a total of eight photos was used in the design.

The five dimensions of information discussed above generated a 2^5 factorial. In addition to these 32 experimental stimuli, 8 fillers were added to disguise the experimental design. The stimuli were presented in a pseudorandom order under the stipulation that no two application forms containing the same photograph would appear in sequence. The set of stimuli were repeated once.

The desirability judgments were recorded by the subject on a 100 mm. line in a response booklet. After the task was explained, several practice stimuli were presented. Then the subject evaluated each of the application forms; this required about an hour. The evaluation procedure was run singly or in groups of two, while the training procedures where conducted individually. The same procedure was used for both the pre- and post-evaluation sessions.

Lecture Training. The lecture training was developed with a structure similar to the one used in our previous agricultural study (Gaeth & Shanteau, 1981). Basically, there were three parts: First, a definition of the irrelevant factor was given and discussed. Second, evidence

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[3]These photographs were pre-tested by Nagy for attractiveness. Our results supported her selection criteria.

was presented which showed that a particular irrelevant factor can cause errors in the judgments of even experienced decision makers. Third, a series of verbal suggestions were presented which were designed to help reduce the influence of the irrelevant information. During training, subjects received instructions only on how to avoid the biasing influence of sex and age. No mention was made of attractivness; this was purposely done so that the generality (to other untrained dimensions) of the training procedures could be evaluated.

Although the complete transcript for the lecture training is given in Appendix A, it may be helpful to give a brief summary of the specific content of the three parts. Part one described the legal definition of bias based on age and sex. Part two discussed the various ways these biases could influence hiring decisions; also, evidence was graphically presented showing that experienced personnel managers suffered from such biases. Finally, part three contained six suggestions designed to reduce the influence of the biasing information. Figure 2 provides a list of these suggestions. It is important to note that at no time was the notion of irrelevance mentioned; these issues were always referred to as "personal biases."

Interactive Training. The interactive training involved actual practice of the suggestions presented in the lecture training. It began with a brief statement about the

LIST OF SIX SUGGESTIONS TO HELP YOU DEAL WITH BIASING INFORMATION

1. EVALUATE THE APPLICANT AS YOU WOULD WITHOUT CORRECTING FOR BIASES.

2. DETERMINE WHAT YOUR OWN BIAS IS FOR AGE.

3. DETERMINE WHAT YOUR GENERAL BIAS IS FOR SEX.

4. SEPARATE THE BIASING INFORMATION OF SEX AND AGE FROM THE USEFUL INFORMATION.

5. CORRECT FOR THE INDIVIDUAL BIASES FOR AGE AND SEX.

6. CAREFULLY COMBINE THE TWO BIASES AND EVALUATE THE APPLICANT CORRECTING FOR BOTH BIASES.

Figure 2. Suggestions used in the lecture training.

irrelevant dimensions and launched immediately into active practice of the suggestions. Thus, overlap with the lecture training was minimal, just as in the original soil study.

The interactive training was divided into four parts. The procedure is summarized below; the complete transcripts are available in Appendix B. In the first part, the subject was given an application form to evaluate; this form had been judged earlier in the pre-evaluation session as a filler. The only difference between this one and the original was a change in the irrelevant information (both sex and age). The new judgment was compared to the old one in as unfavorable a fashion as possible (the most dissimilar of the two judgments in the pre-evaluation session was used for comparison). It was stressed that any changes in judgment from the original must be due to information which caused a bias. This was used to motivate the subject, and show them that they personally were biased by this information.

Next, a series of practice stimuli were used to help the subject learn to deal with the biasing information of age and sex. This was accomplished similarly for both factors by having the subjects evaluate applications which had successively increasing levels of bias. For example, in the case of the age factor, the subjects saw forms with no listed age, an age of 25, an age of 55, and an age of 67. It was stressed that this should produce no changes in their judgments. In the third part of the interactive training the same procedure was used for the sex dimension.

Finally, the judge was given another application form and asked to make a judgment. This form had also been shown before as a filler, but with different irrelevant information. The judgment was compared to the pre-evaluation judgments in as favorable a way as possible to show the subject that he/she was making progress.

RESULTS

Use of Relevant and Irrelevant Information

The first goal of this research was to replicate the previous results of (Nagy, 1981) which showed an influence due to the irrelevant information on the application form. To this end, the responses were analyzed using a 2^5ANOVA on each individual subject. A group ANOVA was not performed here because, as pointed out by Nagy, there are likely to be considerable differences in the way individual subjects use the information.[4] Such differences may be obscured in the group analyses.

The results of the individual pre-evaluation ANOVAs are given in Table 1. Looking at the upper half of Table 1 it is immediately obvious that every subject used at least one of the two relevant dimensions of information (either experience or recommendation) as reflected in a main effect. These findings are strikingly similar to Nagy's. For her subjects, 100% used recommendations, 70% used the experience

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[4]This is especially true for the irrelevant information. For example, one might expect an interaction between sex of the subject and the sex of the applicant. Similar situations can also occur with age and attractiveness.

Table 1

Pre-evaluation use of Information as

Reflected in Significant Effects

	Subject											
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
Relevant	[1]									[2]		
Exp	*	*		*	*	*	*	*	*	n/a	*	*
Rec	*	*	*	*	*	*	*	*	*	n/a	*	*
E x R		*			*				*	n/a	*	
Irrelevant												
Sex			*							n/a	*	
Att					*		*		*	n/a	*	
Age		*	*				*		*	n/a		
Higher Inter.[3]	1	2	2	1	3	1	2	4	2	n/a	1	1

[1] Indicates significance at $p < .05$.
[2] Not appropriate, subject not given correct pre-evaluation.
[3] Indicates number of significant higher order interactions.

recommendation, 91% used experience, and 36% used the interaction.

Inspection of the lower half of Table 1 also shows that every subject used some form of irrelevant information. Six of the 11 used irrelevant information as shown in main effects; all used an irrelevant dimension as reflected in the higher order interactions. Thus, these individual-subject ANOVAs clearly confirm the belief that subjects use irrelevant information as well as relevant information, in making personnel selection judgments.

Efficacy of the Training Procedures

There are a number of analyses which may be used to evaluate the effectiveness of the training procedures. The goal for this report, however, is not to present an exhaustive series of analyses. Rather, only the findings of most immediate interest will be presented.

The effectiveness of the two training procedures was tested first by comparing the use of irrelevant information in the pre-evaluation (before training) with its use in the post-evaluation (after training). This was done by performing ANOVAs on the post-evaluation data which were identical in form to the ones described above. The results are shown in Table 2.

In all subjects but #9, a general shift was seen towards less use of irrelevant information after training. There is both a decrease in the number of irrelevant effects and an increase in the number of relevant effects that are significant. For instance, only two subjects had

Table 2

Post training Use of Information as Reflected in Significant Effects

	Subject							
	S3	S5	S8	S9	S10	S11	S6	S7
Training[1]	Lect	Lect	Lect	Lect	Lect	Lect	Int.	Int.
Relevant								
Exp	*[2]	*		*	*	*	*	
Rec	*	*	*	*	*	*		*
E x R	*			*	*	*		*
Irrelevant								
Sex			*	*				
Att				*				
Age				*				
Higher Inter.	4	0	1	3	0	1	1	0

[1]Lect. = Lecture Training Int. = Interactive Training.
[2]Indicates significance at $p<.05$.

significant main effects, and six out of eight subjects had zero or one irrelevant interaction effects.

Additional Analyses. Based on her results, Nagy proposed an interesting relationship between the irrelevant information and level of relevant information. She speculated that when the level of the relevant factors was high, i.e., both high experience and high recommendations, then the irrelevant information was more likely to be used. This effect may thought of as a "tie-breaker" for those applicants who are otherwise equally qualified on all the relevant information. To further investigate the role of irrelevance, this relationship was pursued.

To understand the point of the next analysis it is necessary to restate the original goal for the training procedures: After training, the judgments of all stimuli which differ on only irrelevant dimensions should be equal (except for error). To test this prediction, the data have been plotted in Figure 3 across the 8 levels of irrelevance for the high experience, high recommendation levels of relevant information. This was done both for lecture training and interactive training. Using these plots, the personnel selection judgments are displayed as a function of the irrelevant information. If the irrelevant information has no influence, then the plotted points should be flat, i.e., no difference. This is clearly not the case for the pre-evaluation (solid lines) judgments.

To check for the effectiveness of the training procedures, the post-evalutaion data was also plotted

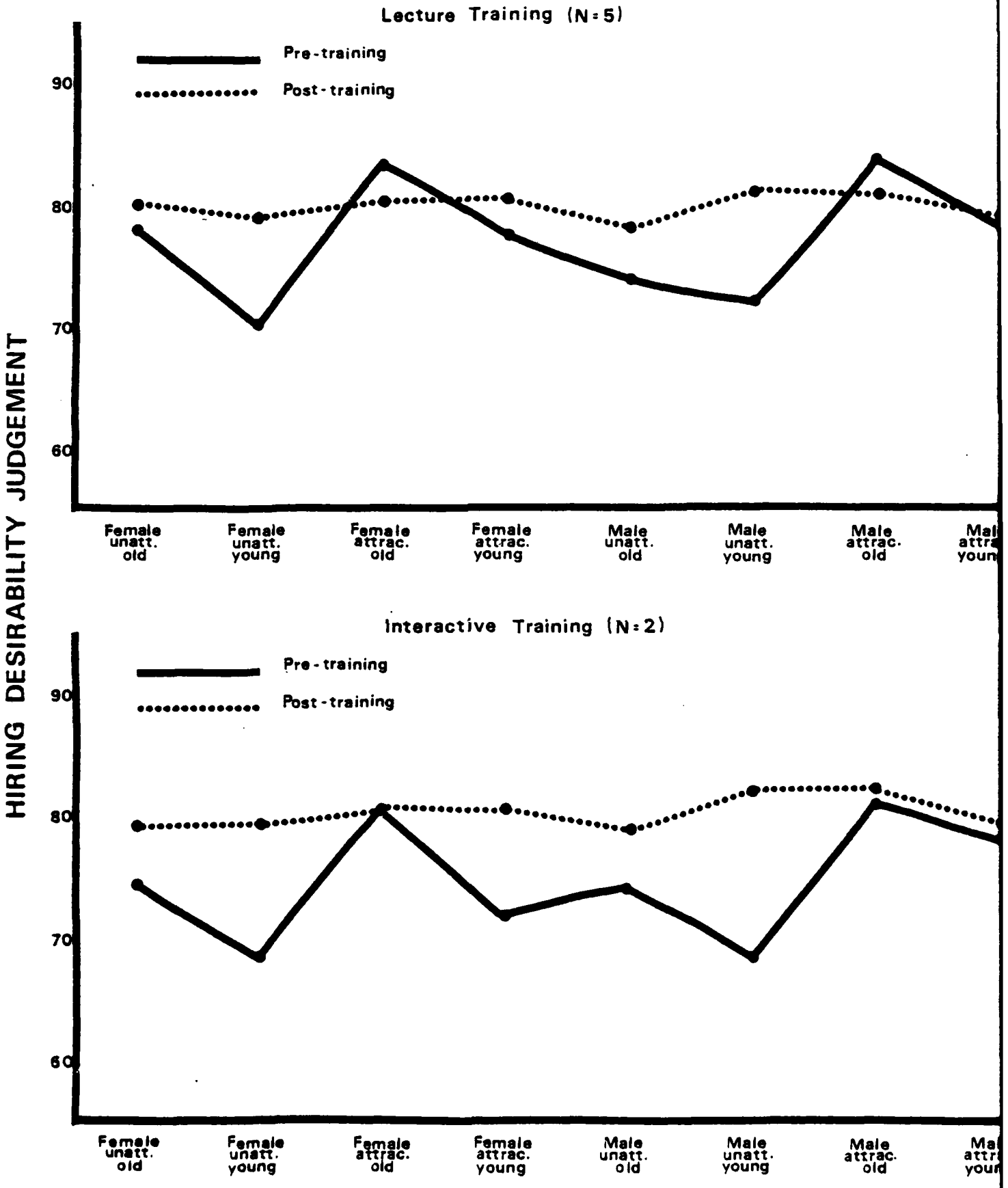

Figure 3. Effectiveness of training in reducing influence of irrelevant information for the high experience, high recommendation stimuli.

(dotted lines) in Figure 3. As can be seen by the flatness of the line, the effect of the irrelevant information was greatly reduced by the training. Although group data appears in Figure 3, individual subjects' plots also confirm this result.

Although a strong case can be made for the impact of training, there is another check. The relevant factors may be thought of as occuring at 4 different levels (2 levels of experience X 2 levels of recommendations). For any fixed level of relevant information, the irrelevant information varied across 8 levels (2 levels of sex X 2 levels of age X 2 levels of physical attractiveness). With this in mind, the prediction that the training reduces the influence of the irrelevant information is reflected in a parallel prediction about variances. That is, when a relevant factor level is held constant, the judgments should show decreased variance when the irrelevant factors have no influence. In fact, if the training worked perfectly, the systemmatic variance should be reduced to zero.

To test this, the variance over the judgments (average of the two replicates) was computed across the 8 levels of irrelevant information. These group results are presented in Table 3. As can be seen, almost all of the variances decreased after training (except in the high-experience, low recommendation instance). Thus, the positive impact of the training procedures can be seen to occur throughout all of the data.

Table 3
Comparison of Pre- and Post- Training Variance Caused by the Irrelevant Information

	Relevant Information			
	High Exp High Rec	High Exp Low Rec	Low Exp High Rec	Low Exp Low Rec
Lecture Training				
Pre-	142.32	115.56	83.72	118.59
Post-	57.55	120.34	41.73	91.01
Inter. Training				
Pre-	141.37	73.10	46.51	48.44
Post-	48.44	278.22	30.91	35.40

DISCUSSION

Implications of the Pilot Results

Based on both the original study by Nagy (1981) and the results of the work in progress discussed here, it has been shown that the irrelevant information of sex, age and attractiveness inappropriately influence the hiring judgments of subjects. However, this influence can be reduced by training. Moreover, both the lecture and interactive training procedures proved to be effective. These two issues concerning the use of irrelevance and the effects of training are worth further discussion.

First, the ability to replicate the results of Nagy's (1981) study was essential for our purposes. In fact, the similarities between our results and Nagy's are striking. Comparable results were found in the usage of both relevant and irrelevant information. More importantly, all of the subjects made some initial use of irrelevant information.

Second, the training procedures as developed for the hiring selection problem were encouragingly successful. Despite the small number of subjects, the evidence points to a consistent reduction in the influence of irrelevance after the lecture training. While there were too few subjects to speak in a meaningful way about interactive training, the results also indicate a positive trend.

One comment: We were able to adapt the basic material from our original agricultural training procedures and restructure it so that it could be applied to hiring decisions. While this turned out to be considerably more

difficult than initially thought, it was successful. However, the true test of the value of this effort will occur when we attempt to generalize the procedures again. All indications are that it will be considerably easier the next time.

Research in Progress

From the foundation created by this study, we are presently carrying out a large scale experiment. Our goals are to evaluate the lecture and interactive training procedures independently. In this large experiment, there are four groups of twenty subjects, each exposed to a different training condition.

The first group is being given only a pre-evaluation and a post-evaluation. This represents the control group, and will be used as a baseline to compare the other training groups. Both the second and third groups have a pre- and post-evaluation. However, the second group receives only the lecture training while the third is given only the interactive training. Finally, the fourth group receives both the lecture training and the interactive training in sequence, with an pre-, mid-, and post-evalution. In this way, it is hoped we can further analyze and refine the training procedures.

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APPENDIX A

Lecture Training Protocol

[Lecture Training for Biases]

For several years now a research group here at KSU has been studying how personnel managers make hiring recommendations. I have been interested in this research because hiring recommendations are so important to a company.

Each hiring decision involves a great deal of money and a considerable time committment both for the applicant and for the company doing the hiring. In addition, usually only one applicant can be selected. But then, if a wrong recommendation is made, it may never be possible to know which applicant was really the best. For these reasons, personnel selection must be made as accurately and carefully as possible.

We have found that the success rate of the job recommendations is generally quite high. By this, I mean that frequently the most qualified applicant is correcly selected. However, when a wrong recommendation is made, and the best applicant is not selected, this often seems to be due to biases caused by such information as age and sex. As you probably know, age and sex legally should not influence the hiring recommendation in any way.

What I would like to talk to you about today are some of the methods which might be used to prevent these illegal biases from influencing your own personal hiring

recommendations. I am specifically interested in discussing how you might go about evaluating an applicant's job potential without being influenced by the applicant's age or sex.

Almost of us have biases of one sort or another. You should realize that these personal biases do exist and that they are very hard to permanently change. We will not be concerned with totally remove these biases here. Instead, we will only try to show you how to avoid having personal biases influence your job recommendations.

As I said earlier, it is against the law to let any biases toward age or sex affect hiring decisions or recommendations. Remember, the point is that we all tend to have biases of some sort or another. So, it is likely that both age and sex will influence you in some way. However, hopefully from this discussion you can learn to control for the influence that age and sex have on your job recommendations.

In the remainder of this session we will go over three things. First, we will discuss the legal definition of bias due to age and sex. In the second part, we will look at how information on the age and sex of the applicant may bias the judgment of even highly trained personnel managers. And then third, I will give you some ideas designed to help you personally make less biased hiring recommendations for job applicants.

[Definition of Bias due to Age and Sex]

Let me start by explaining definition of bias due to age and sex. I have looked up, and would like to present to you, some laws defining the use of age and sex in hiring recommendations. We will consider the two issues of age and sex separately.

Federal regulations cover age discrimination in a law called Title II. This law was passed in 1975 and says that discrimination on the basis of age, as part of any hiring practice, is prohibited. Here we are speaking of all job applicants under retirement age. The government felt so strongly about this issue of age discrimination that the penalty imposed on a guilty company was to have all Federal aid removed. Also, the person who was refused the job is often able to sue the employer to obtain a settlement for a considerable amount of money.

However, even after this law was in effect, age was still illegally used as part of some hiring decisions. Because of this, in 1979 President Carter issued an executive order stating that all businesses had to provide additional records for inspection to determine if there had been discrimination based on age. That is, the government has the right to investigate a business to see if they have discriminated against job applicants because of age. The point is that this and the original law both clearly state that age is not to be used as part of any hiring decision.

Essentially the same type of laws apply for discrimination due to sex. A similar law, called Title

VII, states that information on the sex of a the applicant is not to be used as part of hiring recommendation. This law passed in 1964, includes all aspects of hiring such as advertisement for the job, employment selection, employment requirements, recruitment, job classification, and fringe benefits.

I am sure you are aware the same law states that women should receive equal pay for equal work. Did you also know that this even extends to fringe benefits? For example, pregnant employees must be offered the same benefits as are offered to any temporarily disabled employees.

In addition to leave time, an employer may not exclude from employment, any employee or applicant on the basis of pregnancy. Again, violations of this rule will result in the employer losing Federal Aid. It could also result in a law suit. Therefore the law clearly states that sex should have no influence on a personnel manager's hiring recommendation.

So, you have seen that neither the age of an applicant nor his or her sex should be used as any part of a hiring recommendation. Do you have any questions about what I have said? [Answer any questions].

[Demonstration that Age, and Sex Bias Judgment]

Let me demonstrate that age and sex do influence hiring recommendations.

We have already mentioned that each of us has personal biases. This, of course, includes personnel managers. Evidence exists that some very experienced personnel managers may allow biases to influence their hiring recommendations. Next, we will discuss some evidence showing that age and sex do indeed bias the judgments of even professional personnel managers.

Let's first consider bias due to age. We want to be sure that you understand that most research shows that older employees are just as effectve as younger ones. In fact, although some physical capabilities may decrease with age, these small losses are almost always made up for by increased experience.

Evidence for age bias in hiring can be indirectly determined by considering the proportion of the work force, at different ages, who are employed. This is done by combining information from all jobs across the country. For example, we can consider what percentage of the available 25 year-olds are employed --This is, in fact, roughly 95%. This can be compared to the percentage of available people aged 61 who are employed. What do you think this percentage is? [Get response]. It is actually somewhere around 30% or less. Because we are speaking of percentages, if there were no bias due to age, then these percentages should be similar. If we graph the

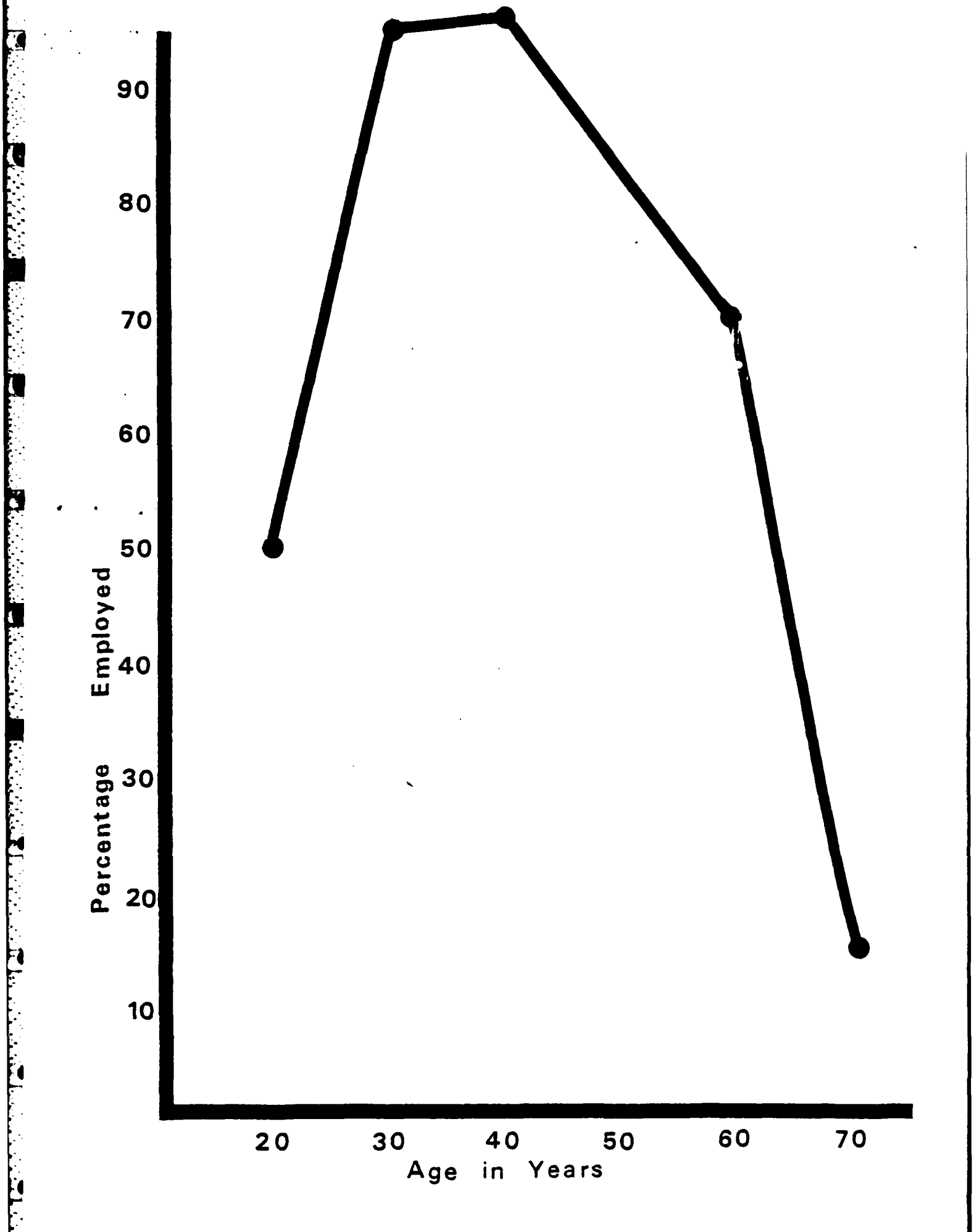
relationship between age and percentage hired it would look like this [show graph].

This graph demonstrates the percentage of employed persons for each age group. Remember, this is how many are employed out of the percentage of the total workers available. The lower the curve, the lower the percentage of the available population who are employed. Notice that the curve decreases very rapidly after about the age of 50. This indicates that starting about age 50, a considerable bias exists. Do you see the decrease ? [Point]. If there was no bias due to age, this curve should extend in a perfectly straight line. Do you understand what is being shown in the graph?

The sex of a job applicant is also known to influence the evaluation by some personnel managers. How much it influences the applicant, and whether it is favorable or unfavorable, depends to a great extent on the type of job. Let me try and explain this to you.

First of all, many jobs may be classified as typically male or typically female. For example, a nurse might be considered to be a typically female job, while a construction worker might be considered to be a male job.

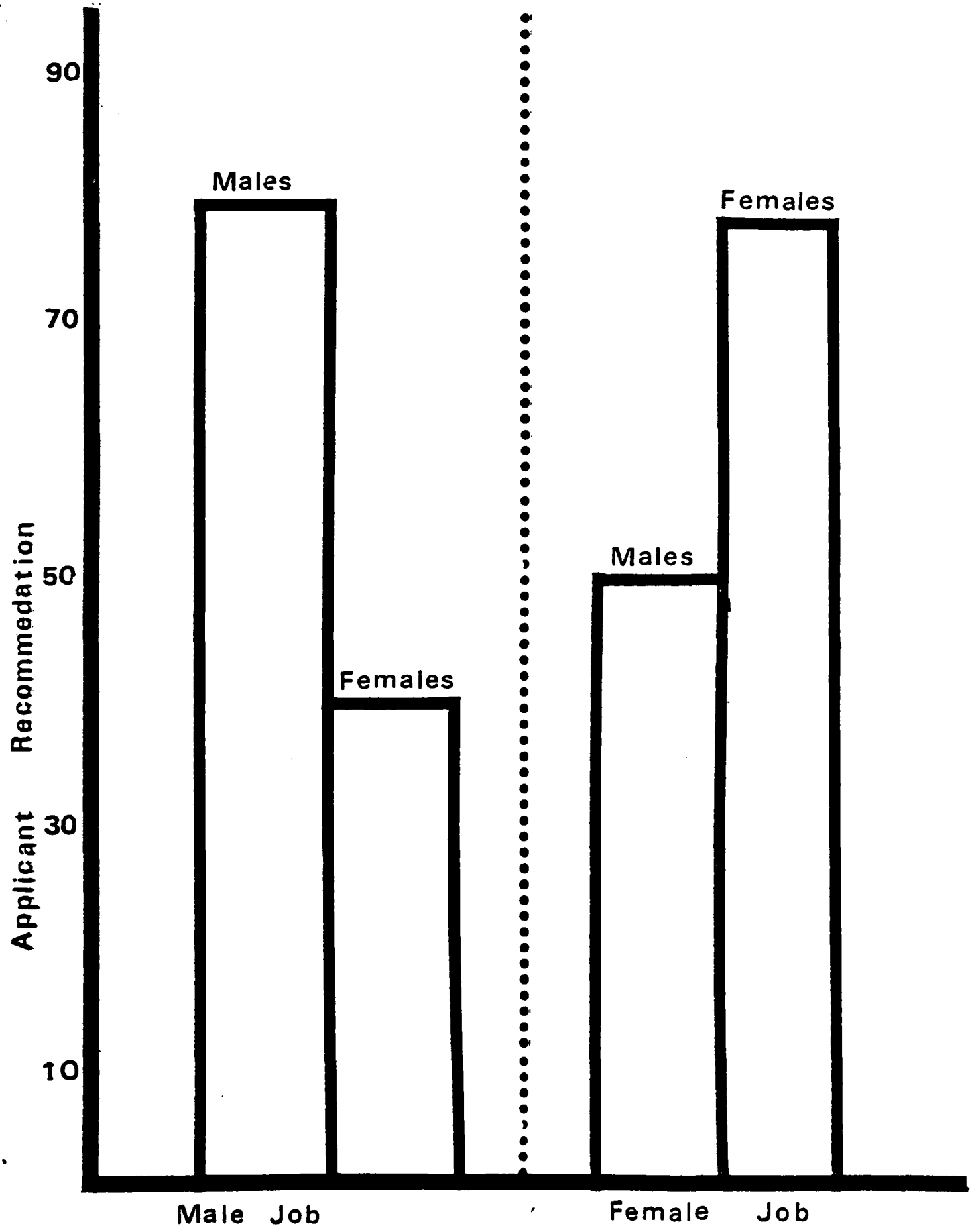
In the case of a typically male job, it is very likely that females will be discriminated against and their applications will be given lower recommendations. That is, for the job of a construction worker, the male applicant is likely to be given a higher rating than a female applicant even if they are equally qualified.


90
80
70
60
50
40
30
20
10
Percentage Employed
20
30
40
50
60
70
Age in Years

This situation is shown in the first panel of this graph [point]. As you can see , males are given a much higher recommendation for the male oriented job than are females. [point] Do you understand what the graph is showing?

This situation is reversed in the case of a typically female job. For female jobs, often the personnel manager will be biased against the male applicant. This situation is again shown in the graph [point]. In this case you can see that for female jobs, the males are given a lower evaluation.

It is also possible that the personnel manager may be biased totally against one sex or the other, no matter what the job. In this case, there would be a consistent bias against women. Therefore, no matter what the job, the female applicant will be discriminated against. The reverse could also be true: There could be an across-the-board bias against men. Bias due to sex is present even though this is against the law.


90
70
50
30
10
Applicant Recommedation
Males
Females
Males
Females
Male Job
Female Job

[Six Suggestions Designed to Reduce the Influence of Extraneous Applicant Information]

I have six suggestions which you may find personally useful in reducing discrimination in your evaluation of job applicants. I have listed them here on this chart [point] which we will follow as we discuss each point.

The first suggestion is easy. You should evaluate the applicant as you would normally. That is, don't try to correct for your biases, just do what comes naturally. The reason to do this is to give you a starting point in the evaluation of a job applicant.

The second step is for you to consider the general biases you may have toward age. For example, you may have a personal bias for applicants above or below a certain age group. Do you think you have an age bias? What is it? [Get response] Good. Do you think this age bias is strong or weak? [get response].

We all have our own biases and as long as they don't affect our hiring decisions, we are not concerned with them here. However, your biases should not be allowed to influence your hiring recommendations. For instance, if a personnel manager believes that a person must be under age 45 to be a good worker, then this is discrimination and can not be allowed. That is because the the manager would then prefer an applicant of that age even though the age information should make no difference.

As the third step, consider your personal sex bias. In the case of the sex information, you may also prefer an

individual who is the same sex as you are. What do you think your personal sex bias is? [get response]. Is it strong or weak? [get response]. Here again, this bias may lead you to inappropriately favor an applicant of that sex over another equally qualified applicant. Remember, the second and third steps ask you to recognize the direction and size of your own biases.

The fourth step is for you to separate age and sex biases from the rest of the information about the applicant. The reason for making this separation is very important. As you know a job application form also contains useful information which you <u>should</u> use as part of your job recommendation. We do not want you to ignore all of the pieces of information about the applicant; just <u>the information which might bias you</u>.

To help you use the fourth step and effectively separate out the biasing information you should first note the sex of the applicant. Then think about the bias it produces in you. Next, the same should be done for the age of the applicant and your corresponding bias. It is important that you decide whether you think the sex and age of the applicant biases you favorably, or unfavorably. Of course, this will depend on you personally.

As the fifth step, now that you have decided what these biases are, you should try to make a correction for them. You should keep in mind and make every effort to prevent the age or the sex of an applicant from having an effect on your hiring recommendation.

Finally, for the sixth and last step, we will remind you of all the other suggestions. Up to this point, you have evaluated the applicant as you would if you allowed the biases to influence your hiring recommendation. Then you evaluated your own personal biases due to sex and age. Next you decided on the size and direction of these biases, and have made an effort to separate the biasing information from the useful information. Finally, you attempted to adjust for the biases.

Now, for the sixth and last step, you should feel comfortable that you are ready to put it all together to determine your overall bias toward the applicant. This may be harder than you think and it need to be done carefully. There are many different ways that two separate biases may combine to form one overall bias. For example, one bias may be favorable, while the other is unfavorable and therefore, they may somewhat cancel each other out. Or the biases may both be in the same direction, say unfavorably, and add up to even larger unfavorable bias.

You must carefully evaluate all your biases together and estimate an overall bias. Once you have done this, you are in a position to reevaluate the applicant after correcting for whatever biases are present. Remember, as a first step you evaluated the applicant as you would normally without correcting for your biases. Now you can make a final different and unbiased recommendation. In this way I think you can learn how to handle your biases in a constructive manner.

List of Six Suggestions to Help you
Deal with Biasing Information

1. Evaluate the applicant as you would without correcting for biases.

2. Determine what your own bias is for age.

3. Determine what your general bias is for sex.

4. Separate the biasing information of sex and age from the useful information.

6. Correct of the individual biases for age and sex.

7. Carefully combine the two biases and evaluate the applicant correcting for both biases.

APPENDIX B

Interactive Training Protocol

Interactive Bias Training

For several years now a research group here at KSU has been studying how personnel managers make hiring recommendations. I have been interested in this research because hiring recommendations are so important to everyone involved.

Each hiring decision involves a great deal of money and a considerable time committment both for the applicant and for the company doing the hiring. In addition, usually only one applicant can be selected. But then, if a wrong recommendation is made, it may never be possible to know which applicant was really the best. For these reasons, personnel selection must be made as accurately and carefully as possible.

We have found that the success rate of the job recommendations is generally quite high. By this, I mean that frequently the most qualified applicant is correctly selected. However, when a wrong recommendation is made, and the best applicant is not selected, this often seems to be due to biases caused by information such as age and sex. As you probably know, age and sex legally should not influence the hiring recommendation in any way.

What I would like to talk to you about today are some of the methods which might be used to prevent age and sex biases from influencing your own personal hiring

recommendations. I am specifically interested in discussing how you might go about evaluating an applicant's job potential without being influenced by that applicant's age or sex. The procedure we will be using involves going through a series of steps designed to aid you in evaluating applications without any bias.

We will begin by having you evaluate this application [old, male]. Could you please read it over and then respond using the same slash mark procedure as you did in the earlier session [record response]. Good.

Okay, this same application form with essentially the same information was evaluated by you in the earlier session. The only difference between this one you see now and the earlier one was a change in the information on age and sex. As I said earlier, legally neither age nor sex information should influence your evaluation. To find out if there is any change, I looked up what you said before.

In the other session you evaluated this same basic applicant [show the old application form] with a slash mark placed here [demonstrate-use the most disparate value], but today you gave an evaluation of [point to the new slash mark]. Notice that your recommendations differ considerably. The [lower, higher] response you gave today could only have been due to the bias caused by information of age and sex. This is because the other information on the application form was identical. [Point and show them this]. Do you understand this?

As I have pointed put these two evaluations you made should

have been identical because the information of age and sex should not have influenced you. This is exactly the problem we would like to deal with in the remainder of this session. I will give you a series of suggestions and ideas which are aimed at helping you control your biases. We will practice each of the suggestions on other applications.

The first suggestion is easy. Initially, you should evaluate the applicant as you would normally. That is, don't try to correct for your biases. Just do what comes naturally. The reason to do this is to give you a starting point in the evaluation of a job applicant.

Each of us has biases of the sort we are considering today. I am only trying to help you discover what yours are. Next, we will talk about some specific things you can do to prevent these biases from affecting your applicant recommendations.

We will look at the problem of bias caused by age information. At this point we are interested in specifically dealing with the influence of age in you recommendations. Consider this application [no photograph, no sex, no age]. Could you evaluate it please [record response]. Notice that the information on age is not included, but all of the critical information is there. Good.

Now evaluate this application [24-young (circled in red), no sex, no photograph]. [record response]. Good. Notice this time the age of the applicant is circled in red. In this case, do you think that the age biases you in favor or

attention to it. It is important to consider the sex of the applicant and then to decide whether you think the sex may bias you personally. You should decide whether you think the sex bias will be either in the favor or against this female applicant. In this instance could you report to me how you think the bias would affect your evaluation ----- that is, either favorably or unfavorably [record response].

Go ahead now and give your recommendation as you would if you allowed the bias to influence you [record response]. Now correct for the bias due to sex, and give your evaluation [record response]. Good. You are learning to compensate for the bias introduced by knowing the sex of the applicant.

Now look at this application [same but male, (circled in red)]. You should decide whether you think bias due to sex will be in favor or disfavor of the applicant. Report to me in what direction you think the bias would affect your evaluation in this case. [record response]. Now evaluate it as you would if you allowed the sex bias to influence your recommendation [record response]. Now correct for the bias and give me your recommendation again [record response]. Good. Did you realize that all three of these applications were the same except for differences in sex information? [record response]. That means you should have given them exactly the same recommendation.

Now consider this application. [male, young]. Did you note the age and sex first so that you would be sure to be aware of them? Did the age bias you for or against the

against the applicant [record response]? How would you evaluate the applicant if you allowed the bias to influence you [record response]? Now how would you evaluate it if you corrected for the bias [record response]? Good.

Here is another applicant [45-old (circled in red), no sex, no photo]. How do you think the increased age would bias you? [record response]. How would you rate this applicant without correcting for the age bias? [record response]. If you corrected for it. [record response]. Good.

Here is another applicant who is even older [66-old, (circled in red), no sex, no photograph]. How would you evalute it after you have corrected for the bias [record response]. Good. I am sure by this time you realized that all of these applications were the same except for differences in age. These differences in age should not have influenced your recommendations in any way, right? That has been what we have been practicing.

Now we will deal with the bias due to sex information. Here is a new application form [no photograph, no age, no sex] for you to consider and evaluate. Notice that the information on sex is not included, but all of the critical information is there. Could you evaluate the application? [record response]. Good.

Now consider this application [female, but the same application] Then you will notice that this time the information on sex is there and circled in red, but all other critical information is the same This was done so that the sex of the applicant would stand out and you would pay

applicant? [record response]. Did the sex bias you for or against the applicant? [record response]. How would you have evaluated the applicant without correcting for the bias [record response]. Good. How would you have evaluated the applicant after correcting for the bias? [record Response]. I am trying to help you get used to separating the information on the job which may bias you from the information which you should appropriately use to make your recommendation.

The next step is designed to help you control for the problem of age and sex biases together. This may be much more difficult. One reason for this increased difficulty is that sometimes the biases and cancel each other out. However, you have no guarantee that this will happen and should not count on it. For example, if both age and sex bias you against the applicant then when these are combined the total bias may be quite extreme. For these reasons, it is important to consider each one of the biasing pieces of information separately here in order to ensure that you have made the most unbiased judgment possible.

Consider this application. [female, old]. I would like you to evaluate this applicant correcting for age and sex bias. The only difference is that I will ask you to report the process to me. First, evaluate the applicant on your own without correcting for the bias and report it to me [record response]. Next, determine the sex and age of the applicant and report them to me [record response]. Great. Next, decide whether each piece of information would tend to

bias you favorably or unfavorably. Report the age bias [record response]. Report the sex bias to me [record response]. Remember to combine the two biases carefully. Report this combination of biases to me [record response]. Now correct for it and report it to me [record response].

Finally, evaluate this application [old, female] using all of the techniques we have learned today. Good. Actually, you saw this application before [young, male] and the only difference was in the sex and age. Last time it was a young male and you evaluted him as _____ [use the nearest value]. This time you said _____ for the older female. Notice, this time your evaluations are much closer, that is very good.

We would like you to try and use these suggestions when you evaluate applicants in the final session [schedule them for it].